BEHAVIORAL AND PERFORMANCE CONSEQUENCES OF U.S. EXECUTIVE EQUITY COMPENSATION AND OWNERSHIP

May 2003

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NOTE: The author wishes to thank Richard Ericson, Charles Fay, John Fossum, and Robert Heneman for their encouragement and comments. The author also wishes to thank Ira Kay for providing more information about his published research findings.

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ABSTRACT

This paper provides an overview of current U.S. practices and research findings concerning key consequences of executive ownership and stock option grants. Logic and some empirical findings suggest that the consequences of the level of executive ownership and the size of stock option grants have non-monotic relationships to firm performance. The size of option grants now typical in the U.S. is likely to encourage an excessive level of risk taking. Stock options are not an effective means of increasing executive ownership and are generally less efficient than full-value grants when comparing opportunity cost to the company and initial psychological value to the executive. Implications for research and compensation design are noted.

INTRODUCTION

During the last twenty years practitioners have tried to better tie the interests of executives in the United States to those of shareholders through the use of more stock options and a much greater emphasis on pay at risk. The results are being challenged. Concerns are being expressed regarding compensation excesses, disconnects between performance and pay, and inappropriate executive behavior. Meanwhile, leading practitioners are questioning whether stock options really do encourage executives to act more like owners, and it is likely that the favorable accounting treatment of stock option grants will be change effective 2005.

Current theories and research findings can provide some guidance regarding such issues. The primary purpose of this paper is to summarize and analyze relevant research findings in order to suggest appropriate ownership and equity compensation practices. Suggestions for future research are also noted.

METHOD

This paper is a review and analysis of existent empirical research. Although some exceptions exist, the research is generally confined to studies of U.S. firms published in the last six years. The reason is that the relative and absolute size of equity-based compensation in the U.S. has changed so dramatically that studies analyzing long-past practices could be problematic. Even with this bias for more recent publications, some findings might apply to a range of practices that no longer exists. For example, the

meta-analyses reported here include studies completed decades ago, and many other studies are based on compensation practices quite a few years prior to publication.

For most of the topics noted in this paper, the underlying causal relationships are complex, and research conclusions are not always consistent. Accordingly, this paper identifies the where the weight of evidence appears to fall – while trying to give the reader a sense of the strength of the conclusions.

This paper focuses on general patterns. It is assumed that the reader understands that appropriate compensation practices for a company are contingent on the specifics of its situation.

U.S. EXECUTIVE COMPENSATION PRACTICES

The design commonalities of current U.S. executive compensation packages are, in part, intentional remedies to historical shortcomings of compensation design. Prior to assessing current practices, this paper highlights recent history and describes the current patterns of top executive pay.

In the early to mid 1980s, U.S. businesses were challenged by increasingly strong global competition and rapid change. Many saw the response of U.S. executives as inadequate. It was argued that they tended to act like a conservative self-interested elite and did not seem disposed to make the bold initiatives needed to meet the challenges (Khurana, 2002). Executives were often seen as collecting their salaries and bonuses independent of the interests of the shareholders and the welfare of rank-and-file

employees. Pay for performance, in the minds of many, appeared to be dead (Kay, 1998).

The compensation response was to encourage executive ownership, to significantly increase the proportion of pay at risk, and to rely much more heavily on stock options to ensure action consistent with shareholder interests. These initiatives, combined with the favorable accounting provided for stock options, an increased emphasis on hiring outside executives to transform companies, and a long upward run in stock prices, created a massive increase in the size of stock option awards to top executives during the last two decades (Basswick, 2001).

Two sets of data regarding compensation levels for CEOs in roughly the largest 500 U.S. publicly traded companies can be combined to provide a good overview of the changes. Hall and Liebman (1998) provide useful information for the period 1980-1992, while Hall and Murphy (2002) show the pattern of median practices between 1992 and the end of the decade. Since the samples and measures are not fully consistent, one can estimate the change over the entire twenty-year period by determining the percent changes within each time period, and compounding these to obtain a total percent change. Two resulting findings, adjusted for inflation as measured by the CPI, are noteworthy:

- CEO median total compensation package for roughly the largest 500 publicly traded companies increased by approximately 520%.
- Most of this increase is the result of stock options. For the 1980 sample, the value of stock option grants measured as of the date of grant averaged 19% of

total direct compensation, with a median of zero. For a similar sample in 1999, the median was 47% of the total compensation package.

A good overview of more current packages for CEOs is provided through a study conducted by Pearl Meyer & Partners and reported in the New York Times (2003). The report concerned the 2002 compensation for CEOs of 200 large companies. The value of stock options was measured at the time of grant, discounted by 30% for lack of transferability.

/INSERT TABLE 1 ABOUT HERE/

The large increase in the size and commonality of stock options has had a major impact on the "sensitivity" of top executive pay to changes in shareholder value. Sensitivity is commonly defined as the dollar change in executive wealth associated with a $1,000 change in the value of the company. In addition to change in the value of cash compensation paid, it includes changes in the value of stock owned and "paper wealth" attributable to unexercised stock options. Changes in company performance explain little of the differences between companies in regard to CEO cash compensation changes (Hall & Liebman, 1998; Tosi, et al, 2000), and annual bonuses are predominantly based on internal goal setting instead of changes in shareholder value (Ericson, 2002). Therefore, salary and annual bonus pay have little relationship to changes in shareholder wealth. However, the current emphasis on equity-based compensation has had a major impact (Kay, 1998). Actual ownership plus equity-based compensation (predominantly stock options) accounts for almost all of the top executive wealth sensitivity (e.g., Hall, 1999; Hall 2000; Murphy, 1999).

Over the last quarter of a century, efforts and success at creating greater top executive ownership are more mixed. While most large companies now either encourage or require their top executives to own stock (Pearl Meyers & Partners, 2002), only a minority report formal stock ownership guidelines (Frederic W. Cook & Co, 2002a). Since the 1970s, top executive holdings have increased in dollar value, but basically as the result of an increase in the market value of their companies instead of their holding a greater portion of the stock (Holderness, Randall and Sheehan, 1999; Murphy, 1999; Watson Wyatt, 2000a).

Overviews of the composition and size of executive compensation package often ignore an important characteristic of top executive pay: actions to provide financial security to the executive in the case of a change in control (CIC) or termination for poor performance. Employment agreements and change in control provisions have become much more common for top executives (Reda, 2002), with a small majority of large companies now having CIC compensation programs and a small majority having employment and severance agreements (Hewitt, 1999; Reda, 2002).

Usually, CIC programs provide generous benefits in the case of an involuntary or constructive termination during a period following a change in control (Hewitt 1999). Constructive terminations are executive resignations after being disadvantaged in some way, with the definition usually being so generous for the executive that the requirement of becoming disadvantaged is usually easy to satisfy (Reda, 2002).

Employment agreements might include CIC provisions, but will also cover other situations as well. Often included for CEOs is any involuntary termination for reasons

other than “cause”, which can be roughly translated as illegal behavior. Therefore, this definition provides for special compensation to top executives who are involuntarily terminated simply for poor performance.

CIC and top executive employment agreements often provide for special treatment of equity and incentive compensation, such as full vesting of unvested restricted stock and stock options and long potential stock option exercise periods after the employment termination. For CIC programs Hewitt (1999) reports that approximately 80% of programs provide for full vesting regardless of the type of long-term incentive program. For performance-based plans granting stock or cash, over 60% compensate based on a full performance cycle instead of the more conservative approach of pro-rating the payment for the proportion of the cycle during which the executive actually served. In short, CIC arrangements, employment agreements, and related arrangements often offer substantial financial payments and protections under certain adverse conditions – at least for a small group of top executives.

Other compensation and ownership patterns also place limits on the downside risk to executives. High-risk firms tend to have higher base pay and lower cash incentives than do their lower-risk counterparts (Bloom and Milkovich, 1998). Firms with high CEO ownership levels tend to provide a smaller portion of the CEO compensation package in equity-based pay (Gray and Cannella, 1997; Harvey and Shrieves, 2001; Mehran, 1995; Sanders and Carpenter, 1998). CEOs in firms with high stock volatility tend to own a substantially smaller percentage of the company stock than CEOs in lower volatility firms (Aggarwal and Samwick, 1999; Schrand and Unal, 1998). CEO personal wealth sensitivity to company stock performance (ownership plus stock options) tends to be

less in firms with high stock total volatility and high stock firm-specific volatility (Aggarwal and Samwick, 1999; Jin 2002). Lastly, it is commonly assumed that stock options will tend to be used most heavily in firms that have tight cash constraints. Contrary to this expectation, Ittner, Lambert and Larcker (2002) found that for high-technology companies the relative value of stock option grants to top executives tend to be larger in companies that have more cash resources per employee. In short, high company risk tends to be associated with various downside protections or limits to risk for top executives.

CONCERNS AND THEORIES

The primary focus of this paper is the consequence of top executive ownership and equity compensation for behavior and company performance. Therefore, a thorough discussion of issues related to all current practices is beyond the scope of this paper. However, the identification of some key themes is important for laying the foundation for an analysis of relevant behavioral and performance consequences. This article begins with the more publicly discussed concerns and then turns to the other themes commonly discussed by academicians and researchers. Other concerns, questions, and research limitations are discussed in this paper as findings are reviewed.

Commonly Discussed Public Concerns

In addition to governance and disclosure issues, the most relevant public concerns can be grouped into two categories: size of the compensation packages and relationship to performance. This paper focuses on the second. In short, some argue that the current design of top executive compensation packages, including stock options, can create

inappropriate behaviors and major disconnects between true performance and pay. Here are some key arguments:

- The large stock option holdings and relatively short vesting periods create a short-term focus on stock price and encourage stock price manipulation (New York Times, 2002; Frederic W. Cook & Company, 2002b).
- Employment contract provisions or special deals made after a triggering event can result in the CEO walking away from failure with massive compensation (Economist, 2003).
- Relying on stock options to tie management and owner interests is deficient in that stock options provide a strong reward for success, but little downside risk if a strategy fails (New York Times, 2002). Therefore, excessive business risk taking is encouraged under the current practice of providing large option grants (Frederic W. Cook & Company, 2002b).

Academic Theories

Concerns have been expressed about the separation of management from full ownership since the time of Adam Smith. The general perspective that has guided most of the recent academic research and discussion of this is agency theory. Rooted in economics, agency theory assumes that executives (the “agents”) will act in their own self interests, including a quest for their own financial and employment security, which can be divergent from the interests of outside owners (the “principals”). Executives enter into a contract with owners to work in the interests of the owners. Enforcement of this contract depends on the availability of timely and accurate information to the owners and direct monitoring through the board or directly by shareholders. To the extent that adequate monitoring is not feasible, incentive compensation can be a useful tool for

enhancing the correspondence of interests between the executives and the shareholders. Although incentive compensation is often appropriate, executives will require a higher level of at-risk pay than would be the case if the compensation were more secure (Grabke-Rundel and Gomez-Mejia, 2002; Miller, Wiseman and Gomez-Mejia, 2002).

Agency theory, therefore, sensitizes one to the need to minimize the executive biases caused by the separation of management from full ownership, the need to achieve an appropriate level of risk taking in business practices, and the executive's likely aversion to a high level of business and personal financial risk. This theory posits three sets of solutions that are now being explored in the U.S.: enhance the timing and availability of accurate information to shareholders, strengthen board and shareholder oversight, and design incentive compensation that better aligns management and shareholder interests.

While agency theory focuses on how to minimize the "moral hazard" resulting from the separation of ownership and management, another approach (sometimes called "managerial capitalism") emphasizes the extent to which controls over internal management are weak. It suggests a core bias in managerial behavior: Instead of maximizing profits, managers over-emphasize growth. The reason is simple: Their status, power and eventual compensation are primarily a function of the size of the company – not whether profits are somewhat above or below average (Grabke and Gomez-Mejia, 2002; Werner and Tosi, 1995).

One characteristic of research based on agency theory is the tendency to examine compensation patterns as the result of attempts to reduce the divergence between management behavior and the interests of shareholders. Recently, some scholars have presented a relatively thorough challenge to this, arguing that it misses another important dimension. Some compensation patterns, they argue, can best be understood as sub-optimal and harmful arrangements that result from the considerable power exercised by managers to shape their own compensation (Bebchuk, Fried and Walker, 2002). Calling this the "managerial power approach," the authors argue that top management has substantial power to extract more compensation than is in the best interests of shareholders, have a desire to camouflage this through inefficient pay arrangements, and are limited primarily by the outrage or negative reaction that it is expected to produce.

Lastly, theories in the financial literature, such as the Capital Asset Pricing Model and findings regarding the relationship between risk, diversification, and risk premiums have been very helpful for generating insights into executive personal risk taking behavior and the efficiency of various forms of equity compensation. Some key findings will be highlighted later in this paper.

RESEARCH QUESTIONS

These discussions and concerns raise a wide variety of research questions, and not all of them can be addressed here. Instead, the findings are summarized from recent research on a set of key questions. These questions are designed to provide a useful basis for evaluating current stock option and ownership policy practices:

- Do stock options provide an effective means of creating more ownership?

- What are the key executive behavioral biases, and how are they affected by ownership and stock option holdings?
- What are the consequences of executive ownership for company performance?
- What are the consequences of the size of stock option grants for company performance?
- In their current form, are stock options an efficient method of delivering incentive compensation opportunities?

FINDINGS

Stock Options as a Means for Creating Ownership

Stock options provide the opportunity for the recipient to purchase shares of company stock within a certain time period at a predetermined price. If they desire, executives are generally allowed to exercise this right through a cashless exercise, under which they immediately sell some of the exercised options to pay for the entire set of options exercised. Such arrangements might appear to have the potential of serving as an effective way to generate more ownership. Does this occur in practice?

There are reasons to be skeptical. As already discussed, top executive ownership (when measured as a percentage of the company stock) did not increase during the last two decades, even though stock option grants became much larger and more common. Also, modern portfolio investment theory suggests that it is generally wise for investors to diversify their bases of wealth -- especially regarding their company of employment because of the dependence of personal earnings on firm performance. Last, agency theory cautions one with the assumption that executives will act to protect their financial security. Research on the timing of option exercises supports this, showing that

executives tend to exercise and sell their options more quickly than risk-neutral financial models suggest is optimal (Huddart and Lang, 1996).

Probably the best empirical research on this topic has been conducted by Ofek and Yermack (2000). It confirms a pessimistic conclusion. Examining the behavior of the top five executives between 1993 and 1995 for a broad sample of 1,646 publicly traded companies, they found:

- Annual changes in stock ownership for the top executives are close to zero, despite the commonality of annual option grants.
- A grant of options for high ownership executives is associated with an actual reduction in their ownership level. Not so for low-ownership executives.
- For high-ownership executives, the exercise of options is not associated with a net increase in ownership that year. For low-ownership executives, ownership grew by only a modest percent of the options exercised.

These findings support the conclusion that stock options, by themselves, are not an effective method of creating actual ownership.

Behavioral Biases

Two potential behavioral biases are discussed here: a bias in favor of company growth and biases regarding business risk-taking. Such biases can be analyzed by (1) simply identifying the logical consequences of the compensation practice applied to self-interested individuals, and (2) reviewing findings regarding actual business behavior. Both are discussed here.

Growth Bias. One of the more important academic hypotheses is that executives will over-emphasize company growth instead of trying to maximize profitability. This receives some logical validation through findings about the determinants of the size of compensation packages. Three findings are noteworthy:

- Labor economists are able to explain a surprisingly small amount of the differences in the size of CEO compensation packages by reference to traditional labor market factors (Gomez-Mejia and Wiseman, 1997). This suggests that much variation in the size of CEO pay packages is likely to be the result of initial and on-going negotiation dynamics instead of a tight fit with "competitive" compensation requirements (Barkema & Gomez-Mejia, 1998).
- Consistent with managerial capitalism theory, by far the best predictor of the size of a cash compensation or total compensation package is company size (Finkelstein and Boyd, 1998; Tosi, Werner, Katz and Gomez-Mejia, 2000).
- Recent company financial performance explains little in regard to either the size of or changes in the size of compensation packages (Barkema and Gomez-Mejia, 1998; Finkelstein and Boyd, 1998; Tosi, Werner, Katz and Gomez-Mejia, 2000).

Although the wealth sensitivity attributable to equity compensation might provide a substantial incentive to generate increased shareholder value, the findings just noted suggested that executives have an incentive to simply grow the company or focus on pay negotiations more than to improve financial performance itself if they want to increase the size of their future compensation package as measured at the time of grant.

Empirical findings regarding large acquisitions provide additional support for the conclusion that a growth bias is common. While some large acquisitions certainly have been beneficial, on the average such acquisitions tend to result in an eventual reduction in the acquiring firm's stock price as compared with the price that otherwise would have been expected (Agrawal, Jaffe and Mandelkar 1992; Datta, Iskandar-Datta, & Raman, 2001; Rau and Vermaelen 1998). This suggests that large acquisitions are overdone.

Large acquisitions can be seen as indicative of a drive for growth. However, they also introduce substantial business risk. Therefore, a caution is in order: the conclusion that they are too frequently done can be interpreted either as evidence in favor of the growth bias hypothesis or might simply be part of a general tendency to engage in strategies that take on too much business risk.

Business Risk. One of the more thoroughly researched potential behavioral biases is the degree of business risk taking. A common assumption among researchers relying on agency theory is that in the absence of counteracting incentive compensation or shareholder pressure, executives will tend to take on less business risk than would be optimal for outside shareholders. Interestingly, many researchers not working from the agency theory perspective (e.g., Bebchuk, Fried, and Walker, 2002) also accept this assumption.

One potential method of reducing such discrepancies between the interests of outside owners and the actions of executives might be to ensure a significant level of ownership by the executives. Another is to enhance a correspondence of interests through equity-based compensation, such as stock options. Stock options can be create a powerful

incentive to increase risk taking because the payout structure provides a leveraged gain if the risk-taking strategy succeeds and no loss if the business strategy fails (Murphy, 1999).

This logic regarding the risk-taking consequences of stock options has relatively strong behavioral empirical support. Empirical research regarding a diverse set of business behaviors (e.g., acquisition and divestiture activity, risk-taking in oil drilling, hedging of gold price risks by gold mining companies, hedging of risks of thrift savings institutions, hedging of oil exploration risks) clearly supports the conclusion that larger stock option grants to executives encourages more risk taking (Rajgopal and Shevline, 2002; Sanders, 2001; Schrand and Unal, 1998, Tufano, 1996).

Although stock option grants encourage more business risk taking, an important question that has not been directly addressed in most academic empirical research on the topic is whether the current result is too much risk taking. However, this might be the case and has received substantial discussion in the practitioner community (e.g., Watson Wyatt, 2000a).

Two points are noteworthy. First, the level of executive business risk taking is likely to depend on factors other than simply the size and design of incentive compensation. As has been noted in this paper, it is now quite common for CEOs to have employment contracts and/or change-in-control agreements that protect them financially under a variety of adverse circumstances. As has also been noted, there is a pattern of limiting compensation risk to executives in especially risky companies. Such arrangements, combined with the general business culture at the time, can affect risk-taking behavior.

In short, a current need for incentive compensation in the United States to increase risk taking should be subject to empirical verification instead of simply assumed. Second, the size of stock option grants, and not simply the existence of any options, is relevant. If business executives would tend to act too conservatively without equity-based pay, a certain size of option grants might provide an adequate balance. However, very large grants might encourage the executive to be too risk-prone.

Two types of research findings can be used to empirically determine whether risk taking tends to be too high under current compensation practices. The first is whether or not the risk taking enhances future stock performance. As previously noted, this has been studied in regard to large acquisitions. However, the findings of adverse impact on stock performance have ambiguous implications: they can be interpreted as the result of a bias in favor of growth and/or a bias toward risk-taking.

The second is identifying how outside shareholder power and executive ownership affect risk-taking behavior in a company. The implicit standard is that the appropriate level of risk taking should be consistent with that deemed desirable by outside shareholders or by executives who have a strong true ownership position. If the general pattern is for risk taking to be too low, one should find that companies with strong outside shareholder power or high levels of executive ownership will tend to display a higher level of risk taking. However, the dominant pattern is the opposite. A common finding is that acquisition and divestiture activities tend to be lower when CEO ownership is high and when outside shareholder power is strong (Gompers, Ishii, and Metrick 2003; Sanders 2001). Likewise, a relatively high level of CEO stock ownership is associated with less risk-taking in gold mining (Tufano 1996) and less stock volatility after thrift conversions

(Schrand and Unal, 1998). The dominant pattern is that strong outside shareholders and significant CEO ownership tend to result in less risk taking than is currently generally the case, while high stock option grants tend to result in more. In short, the weight of evidence suggests, for at least recent practices in the U.S., that (1) the average level of risk taking is higher than the interests of ownership would suggest, and that (2) more executive ownership pushes executives in the opposite risk taking direction than does a large stock option grant.[2]

The analysis of risk taking behavior provided here has some implications for future research. First, it would be useful to empirically examine the consequence of financial protections in executive compensation packages for risk taking. Second, since business risk taking behavior is in part of the result the general business culture at a point in time and since such behavior is likely to be affected by "down-side" protections, researchers should not assume that executives will be prone to too little business risk taking unless they have incentive compensation designed to encourage it.

Insider Ownership and Firm Performance

A core concern in agency theory and in most other analyses of executive compensation is that the separation of management and ownership can cause inappropriate managerial actions. It has become almost axiomatic, therefore, that a strong ownership interest by top management can reduce the adverse effects and, therefore, enhance firm performance and shareholder returns. Unfortunately, the actual results appear to be more complex.

Dalton, Daily, Certo and Roengpitya (2003) have recently published an analysis of 229 studies that have related ownership levels to firm performance. Their focus is an examination of correlation coefficients between ownership and various types of financial and stock performance. They combine correlation information provided in the many studies to create estimates of the true correlations between the relevant variables. In short, they found that the resulting estimated correlations were so small as to suggest essentially no meaningful positive or negative relationship between the extensiveness of insider holdings and stock performance. The correlations for other performance measures varied, but were generally weak or insignificant. Therefore, this analysis of existing studies suggests that one probably cannot assume a strong and simple positive relationship between insider ownership and company performance.

Unfortunately, two relatively common shortcomings exist in the empirical research concerning the relationship between insider (i.e., officer plus director) ownership and company performance: (1) the measurement of ownership, and (2) the assumption of linearity.

Although research practices vary, some of the research equates ownership to “beneficial ownership” as defined for proxy statement reporting. This includes not only true voting power ownership, but also all vested stock options and all unvested stock options that are scheduled to vest within 60 days. Moreover, this measure is commonly expressed as a percent of all shares outstanding. Both of these practices are problematic. As has already been shown, stock options do not necessarily have the same behavioral consequences as voting-rights ownership. Therefore, including option holdings in the measure of ownership can significantly confuse matters. Second, expressing ownership

as a percent of all shares outstanding can be very useful for measuring the level of insider power, but is a poor metric for analyzing the size of the motivational impact to the executive. A better measure is either the one used by most companies that have ownership guidelines (value of the stock owned as a percentage of base salary) or simply the dollar value of stock owned.

Recent research by Dolmat-Connell (2002) offers empirical support for these concerns. For 100 large companies within ten industries, Dolmat-Connel examined the correlation between ownership by the top five named officers and the last five years of total shareholder return relative to each company's peers. The author found no significant relationship when beneficial ownership was used as the measure. However, when the company rank on true ownership expressed as a percent of base salary or in simply dollar terms was used, moderately strong and statistically significant relationships were found.

The second weakness is the common assumption of linearity. A variety of studies do suggest that a relationship exists, but that the relationship is not a simple positive one. Intuitively, two contradictory forces might be at work. As compared with no ownership, a meaningful amount (e.g., five-times salary) might have substantial positive effects in regard to identification with shareholder interests. However, if insider ownership is too high a percentage of all shares outstanding, the result could be an entrenched management that is effectively outside of the control of other shareholders. For example, when insider ownership (including ownership by Board members) reaches 20%, it is generally near impossible for a widely dispersed shareholder population to mount a successful campaign to oust the directors and officers. If this line of reasoning

is correct, one might expect either an inverted U-shaped relationship (more ownership at lower levels is positively related to performance, but at the higher levels negatively related to performance) or a more complex relationship with the strongest positive component confined to lower levels of ownership.

This has been a relatively common finding, although causation is relatively difficult to establish and the pattern of findings has not been universal (Himmelberg, Hubbard and Palia, 1999). For example, Holderness, Kroszner and Sheehan (1999) examined the relationship between ownership by officers and directors and a measure of performance (the ratio of market value to book value of assets) for a cross-section of publicly traded firms in 1995 and in 1935. For both periods when other factors were controlled, ownership was positively related to performance only if board ownership was no higher than 5% of all shares outstanding.

Similarly, Hermalin and Weisbach (1991) examined the relationship between director ownership and Tobin's Q (the ratio of the firm's market value to the replacement cost of its assets) for 142 NYSE firms over a twelve-year span. They found a positive relationship with performance for ownership levels less than 1%, a negative relationship for levels above 20%, and an insignificant relationship in between.

McConnell and Servaes (1990) also found a curvilinear relationship, with ownership being most consistently positively related to Tobin's Q for officer and board ownership levels below 5%.

Morck, Shleifer, and Vishny (1998) analyzed a cross-section of 371 Fortune 500 firms, finding a relationship that was more complex. They examined the relationship between two financial measures (Tobin's Q and a measure roughly equivalent to return on assets) and ownership by the directors and two senior officers. For both financial performance measures, they found that with or without statistical controls, the 0%-5% ownership range shows a positive relationship.

In summary, empirical evidence suggests that, more likely than not, a significant causal relationship exists between officer and director voting ownership and firm performance such that an increase in total director and officer ownership within at least the 0% to 5% ownership range is associated with better performance. Since the personal financial impact of percentage ownership depends on the size of the company, one might expect that the relevant percentage range would be larger for small firms.

The implications of this review for future research are clear:

- True ownership and stock option holdings should not be combined unless one has analyzed them separately and finds no difference in their consequences.
- When analyzing the motivational impact of ownership, the use of salary multiples or simply the dollar value is probably more appropriate than expressing ownership as a percentage of all shares outstanding.
- Linearity in the relationship between ownership and performance should not be assumed – with a non-monotonic relationship being the most likely. In short, the old dictum of examining the shape of the relationship should be followed much more consistently.

Stock Options and Firm Performance

It has already been noted that the size of unexercised stock option holdings can have behavioral consequences in the opposite direction of actual ownership. Therefore, one cannot assume that the level of stock option holdings will have the same relationship to performance as does ownership.

Unfortunately, relatively little empirical research has been done on this difficult topic. A good summary of the state of this research was provided by Murphy (1999). Here is what he says about whether CEO incentives matter for company performance: "Although there is ample evidence that CEOs (and other employees) respond predictably to dysfunctional compensation arrangements, it is more difficult to document that the increase in stock option incentives has led CEOs to work harder, smarter, and more in the interest of shareholders." (page 2556)

When looking for a simple positive or negative relationship between pay sensitivity (wealth change per $1,000 of shareholder value change) and performance, the consequences appear to be meager or conditional on other factors (Carpenter and Sanders, 2002; McConaughy and Mishra, 1996).

Evidence in support of a non-monotonic relationship has been provided by Mishra, McConaughy and Gobeli (2000). They analyzed the effects of CEO pay sensitivity (dollar change in wealth for each $1,000 increase in company value to shareholders) for return on equity during 1989, 1990, and 1991, controlling for firm size. In order to explore the possibility of a non-linear relationship, they categorized the 430 companies in their study as in the lowest 25% (Q1) regarding CEO pay sensitivity, 25%-75% (Q2-

Q3), and the highest 25% (Q4). For each of the three years they found that the level of CEO pay sensitivity was most strongly related in a positive fashion to future firm performance when the pay sensitivity was relatively low (i.e., Q1), less strongly positively related for Q2-3, and negatively related to firm performance for Q4. Note that since this time the size of stock option grants have increased markedly such that Q2-3 grants would probably now be Q1.

Watson Wyatt has broadened this, periodically reporting on the relationship between stock option overhang (the percent of shares outstanding that are reserved or in use for stock option grants) and company performance (Watson Wyatt 2000a, 2001b). In their more recent study (2001b) they examined the relationship between overhang in 1999 and total shareholder return (TSR) in 2000 for 980 companies of the S&P Super 1500 – divided into three industry segments: technology, health care, and other. They found that TSR was highest at mid-levels of overhang. They estimated optimal overhang levels, noting that they are well below the fourth quartile in each industry group, and below the median in two of the three.

In the prior year, Watson Wyatt (2000a) analyzed the relationship between overhang and the natural log of Tobin's Q for 850 of the S&P Super 1500, controlling for a variety of other variables and reporting the results for each of five broad industries. They found that 1997 overhang was related to 1999 Tobin's Q in a curvilinear fashion: performance was highest at mid-levels of overhang. Their estimates of the optimal industry-specific levels of overhang appear to be below the industry median for most the industries. The imputed consequences of overhang were strongest for companies with substantial R&D expenditures and low capital intensity.

Although of marginal relevance for this analysis, findings recently reported from a widely quoted book in favor of broad-based grants are noteworthy. For the largest 1,500 publicly traded U.S. companies, Blasi, Kruse and Bernstein (2003) analyzed the relationship between the proportion of all stock options going to the top five executives and later company stock performance. They found a negative relationship with absolute company stock performance, but no relationship when change in performance was the dependent variable (pp 200-201). Either way, giving an unusually large proportion of all option grants to top executives does not appear to generate better stock performance.

Other researchers have focused on the specific mechanics of the relationship between company financial performance and gains from stock options (Bisson, 2001; Ericson, 2002). The results challenge the wisdom of the currently common practice of vesting beginning one year after the date of grant. As Ericson has noted: During the one-to-three-year term "stock prices fluctuate for reasons mostly unrelated to company performance". Therefore, "stock-based incentive gains are essentially a crapshoot." Moreover, "during the five-year-or-so period during which a typical stock option is held, stock prices are driven, at best, only one-half by business /financial/ results."

What can one conclude from this modest body of research regarding the consequences of executive stock options for company performance? For current granting levels in the U.S., research does not support the simple assumption that larger grants will create better financial performance. Instead, a small amount of research suggests that the positive impact of stock options for performance is confined to no more than the lower half of the industry-specific range of current option granting practice. It appears that a

practice of unusually high levels of option grants or total overhang is likely to do more harm than good in regard to company performance. Lastly, the connection between stock option gains and actual financial performance could be enhanced if the time period between the grant and initial vesting were longer.

Even if stock options to executives at relatively modest levels are helpful for creating shareholder value, one cannot assume that they are the most effective compensation alternative. Therefore, prior to reaching policy conclusions about stock option compensation, findings are summarized regarding the efficiency of stock option grants as a compensation mechanism. This analysis has implications for how equity-based incentive compensation might be most effectively delivered.

Efficiency of Stock Options

In addition to encouraging the desired behavior, a compensation program should provide the recipient with a perceived value that is relatively high as compared with the cost to the company. To the extent that this is not the case, the agency theory concern about the need to provide larger compensation becomes more significant.[3]

Financial modeling and actual trade-off patterns between stock options and risk-free pay both suggest that stock options are relatively inefficient as a pay delivery method. Meulbroek (2001), for example, has shown that the executive's inability to adequately diversify risk results in stock options being significantly less valuable to even a risk neutral executive than the company's opportunity cost (likely price obtained if the option were sold to an outside party). In a variety of publications (most recently, Hall and Murphy 2000, 2001, 2002) Hall and Murphy estimate the discounts for different levels of

risk tolerance. Murphy (1998) provides a high-level overview: "Economic modeling of executive stock option valuation, coupled with analyses of actual exchanges of cash for options, suggest that executives value options between one-third and one-half of the Black-Scholes value." In short, the discount applied is very large.

It is useful to understand how equity program design characteristics affect this discount.

In a practitioner journal, Hall and Murphy (2001) provide a good overview of some of their key findings:

- The higher the exercise price as compared to the stock value as of the date of grant, the greater will be the percentage spread between the value to the executive and the Black-Scholes cost to the company. Accordingly, restricted stock, having no exercise cost, has the least spread. Premium options with an exercise price at 200% of the stock price at the time of grant would have a company cost five times the value to the executive.
- Imposing a vesting requirement of two to four years has little impact on the efficiency ratio, while a vesting requirement longer than four years has a significant impact.

IMPLICATIONS FOR COMPENSATION PRACTICES

The findings reported here are usually based on general patterns for publicly traded companies in the United States. Implications for compensation design should be interpreted in this light. Companies at different life-cycle stages and facing different business conditions might have a diversity of appropriate compensation solutions.

Similarly, different dynamics could be operative in privately held companies. Recognizing these cautions, some policy implications are noteworthy.

Some research suggests that executive ownership appears to be helpful for generating behavior consistent with shareholder interests. However, it can be harmful at high ownership levels that can make it very difficult for outside investors to effectively challenge management. Consistent with this, evidence suggests that increases in top executive and director ownership at relatively low percentage levels are most likely to enhance firm performance. One implication is that ownership at relatively modest levels should be encouraged of top executives and directors.

Stock options as commonly designed have been shown to be very ineffective for enhancing ownership. Therefore, one should not rely on stock options to achieve adequate ownership, but create other opportunities and pressures to do so. Examples of possible programs are formal ownership guidelines, executive stock purchase programs, a mandatory deferral of part of annual bonuses into company stock, and restricted stock with holding requirements.

Another set of conclusions concerns the size of stock option grants. Stock options can result in behaviors different than true ownership would suggest. Stock options appear to result in taking more business risk than owners would normally desire. In addition, high levels of equity-based pay (now predominantly stock options) and high stock option overhang are associated with lower firm performance. Although the evidence is relatively weak, stock options and overhang levels generally appear to have a positive impact on business performance only if they are somewhere below the current median in

size. Therefore, if stock options are the dominant method of delivering equity-based long-term incentives, grant guidelines probably have an optimal range below the relevant current peer group median practice. Most likely, it is closer to the first quartile.

Commentators have expressed concern about the weakness of the connection between true business performance and changes in stock price. Some respected practitioners recommend the use of premium options or indexed options to enhance the connection between performance and pay. Research findings reported in this article suggest that it would be unwise to emphasize either. Such compensation practices would likely create a strong pressure to take inappropriate business risks and be very inefficient in terms of perceived value to the executive.

If stock options are to be granted, one change should focus on vesting. Since company performance instead of market noise better drives stock price more over longer time periods and since little is lost in terms of grant efficiency, cliff vesting after at least three years would be preferable to the currently common gradual vesting after one year. Moreover, acceleration of vesting and other extraordinary equity compensation benefits in the case of dismissal for poor performance should be abandoned.

The research findings are probably supportive of relatively modest stock option grants as compared to very small or nonexistent grants. However, other forms of equity-based compensation might be better. In addition to the issues raised by the asymmetric reward schedule of stock options and potential for excessive risk taking, other disadvantages of stock options exist. Examples are the poor retention power of stock options when stock prices decrease, the disincentive to provide dividends, and the modest perceived value

to the executive as compared with the opportunity cost to the company. Restricted stock is an attractive alternative or supplement. Therefore, grants of restricted stock with significant vesting and/or holding requirements should have a more prominent role than is currently the case. Greater line of sight could be obtained if the speed of vesting depended on the level of performance in comparison with the company's peer group.

Restricted stock has the disadvantage of eventually delivering the compensation if the executive simply stays with the company. Therefore, performance shares will often be a better alternative. These are grants of shares contingent upon and made after achievement of pre-defined performance standards or goals. Performance shares can be a good method of aligning executive and shareholder interests if the size of grants are based on stock performance in comparison to an outside measure, such as the median performance of industry peers over a multi-year time period. Unlike indexed stock options, such programs could provide a "competitive" grant of stock for average relative performance, a larger grant for stronger performance, and a weaker (or no) grant for weaker performance.

Whatever supplements to or replacements of stock options occur, they should be scrutinized in light of their ability to create a balanced ownership mentality, be relatively efficient as an incentive tool, provide a strong tie with shareholder interests, avoid perverse incentives to act differently than shareholder interests would imply, and provide a meaningful connection between pay and long-term financial performance that generates shareholder value.

FOOTNOTES

1. See Agrawal, Jaffe and Mandelkar (1992) and also Loughram and Vijh (1997) for documentation as to the general pattern. Although the aggregate average consequence of acquisitions and mergers for the acquiring company is a lower than expected stock price over a three or five-year period, cash tender offers (which are a small minority of such transactions) tend to show positive results (Datta, Iskandar-Datta and Raman, 2001; Loughram and Vijh, 1997; Rau and Vermaelen, 1998).

2. Findings from a study of 485 acquisition outcomes for acquisitions occurring between 1993 and 1996 (Datta, Iskandar-Datta, and Raman, 2001) do not support all of these conclusions. The authors did find that the acquisitions made by companies with executives recently receiving relative large option grants were more likely to take on riskier acquisition projects. However, the authors note that the quality of acquisitions (low acquisition premium and favorable acquirer stock performance) is positively associated with the size of the most recent stock option grant to the top five executives. Surprisingly, neither executive ownership nor the cumulative size of active option grants made in previous years appeared to be relevant: only the most recent stock option grant is beneficial. Unfortunately, these findings might be the result of including the bonus paid in the denominator of the ratio expressing the most recent option grant size, while using different metrics for expressing ownership and previous option grants. Accordingly, this study is not given the same weight as the other studies reported here.

3. For a recent survey of the relative value placed on stock options by top-performing employees, see Watson Wyatt (2002).

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TABLE 1
CEO Compensation Among 200 Large U.S. Companies, 2002*

Compensation Component	Mean
Salary	10%
Bonus Paid	15%
Restricted stock, other long-term	17%
Stock options	55%
Other	4%
Total	100%
Total Dollars	$10,833,076

The distribution for stock options is skewed, with the median being only 67% of the mean. The distributed for restricted stock plus other long-term compensation is even more skewed, with the median being only $183,000, or 10% of the mean. At the median (not shown here), stock options constituted approximately 95% of all long-term compensation.
Source: New York Times. 2003. Executive Pay: Special Report. April 6, 2003. BU7-9.